

Translation

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>2003P30244WO</b>	<b>FOR FURTHER ACTION</b> See Form PCT/PEA/416	
International application No. <b>PCT/DE2004/000844</b>	International filing date (day/month/year) <b>23.04.2004</b>	Priority date (day/month/year) <b>26.04.2003</b>
International Patent Classification (IPC) or national classification and IPC		
Applicant <b>GM GLOBAL TECHNOLOGY OPERATIONS, INC.</b>		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in Item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement (under Article 35(2)) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand	Date of completion of this report	
Name and mailing address of the IPEA/EP	Authorized officer	
Facsimile No.	Telephone No.	

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/DE2004/000844

Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 17 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-13 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 1-15 as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/3-3/3 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_
- \* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY		International application No. PCT/DE2004/000844
Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	
1. Statement		
Novelty (N)	Claims	3-5, 8, 13, 15 YES
	Claims	1, 2, 6, 7, 9, 10, 12, 14 NO
Inventive step (IS)	Claims	YES
	Claims	1-15 NO
Industrial applicability (IA)	Claims	1-15 YES
	Claims	NO
2. Citations and explanations (Rule 70.7)		
<p>1 This report makes reference to the following documents:</p> <p style="margin-left: 40px;">D1: PATENT ABSTRACTS OF JAPAN, Vol. D12, No. 400 (M-756), 24 October 1988 (1988-10-24) &amp; JP 63 143360 A (MAZDA MOTOR CORP) 15 June 1988 (1988-06-15)</p> <p style="margin-left: 40px;">D2: WO D2/48528 A (JAUSS ANDREAS; OPEL ADAM AG (DE) 20 June 2002 (2002-06-20)</p> <p style="margin-left: 40px;">D3: PATENT ABSTRACTS OF JAPAN, Vol. 2000, No. 22, 9 March 2001 (2001-03-09) &amp; JP 2001 127682 A (MITSUBISHI ELECTRIC CORP) 11 May 2001 (2001-05-11)</p> <p>2 INDEPENDENT CLAIMS 1 and 14</p> <p>2.1 The present application does not meet the requirements of PCT Article 33(1), because the subject matter of claims 1 and 14 lacks novelty within the meaning of PCT Article 33(2).</p> <p style="margin-left: 40px;">D1 discloses:</p> <p style="margin-left: 40px;">an internal combustion engine for operation using at least two different high-octane fuels</p>		

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

("high/low octane rating fuel"), having at least one cylinder in which combustion takes place cyclically, and a dosing system (throttle valve 3) for supplying a quantity of air-fuel mixture regulated by a control signal ("accelerator opening") to the cylinder during each cycle, the dosing system being designed such that, when the lower octane fuel is used and the control signal reaches a predetermined value, a first quantity of air-fuel mixture is supplied which is less than a second quantity supplied when the higher octane fuel is used and the control signal value is the same ("To restrict a suction air quantity..., by making the upper limit value of throttle opening smaller ... in case of using low octane rating fuel").

The above also applies analogously to the independent method claim 14.

- 2.2 The applicant should note that D2 and D3 are also regarded as prejudicial to the novelty of claim 1 and claim 14. In D2, in natural gas mode, a greater charge is supplied to the engine through the use of a turbocharger with than in gasoline mode (see, for example, page 5, lines 6-10), whereas in D3, the quantity of air added is adapted to the fuel used by means of variable valve control.

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	International application No. PCT/DE2004/000844
3	<p><b>DEPENDENT CLAIMS 2-13 and 15</b></p> <p>Claims 2-13 and 15 contain no features that, in combination with the features of any claim to which they refer, meet the PCT requirements for novelty and inventive step.</p> <p>- Claims 2-5:</p> <p>D1 already describes the use of different limit curves (see A and B in Figure 2) for the throttle valve openings. Furthermore, it is generally known that the knock probability increases in the high load and rpm range. Therefore, the dependence of the dosing rules on rpm cannot be regarded as involving an inventive step.</p> <p>- Claims 6-8:</p> <p>D2 already describes a valve arrangement of this type. The use of a fuel pump is not regarded as inventive.</p> <p>- Claims 9-11:</p> <p>D1 already describes a throttle valve according to claims 9 and 10, and in D2 a charger is already used in the supply line.</p> <p>- Claims 12, 13 and 15:</p> <p>Internal combustion engines with a high compression ratio for operation with gasoline and natural gas are generally known in the prior art.</p>	